

IV. Application

A. Wind Duration vs. Wave Height

- If you have completed the Forecasting activity in the Storms section, skip the wind barb section below.
- Click on the University of Illinois at Urbana-Champaign WW2010 Project Wind Barb site.
- Read about wind barbs. Once you understand how wind barbs work, click "Back" to return to the Great Lakes "Application.1" web page.
- Click on the "All Lakes Wind" site.

1. Describe both the direction of wind and the speed of wind on Lake Michigan. What is the overall pattern of wind speed and direction on the lake?

2. Describe the wind speed in different locations on Lake Michigan.

- Click "Back" to return to the Great Lakes "Application.1" web page.
- Click on the "All Lakes Wave Height" site.
- Click the "Back" and "Forward" buttons on the web browser to compare the pictures.





3. Describe the wave height in different parts of Lake Michigan.
What is the overall pattern of wave height?

4. What would you expect the relationship to be between the length
of time the wind blows over the water and the height of the waves?



- Click "Back" to return to the Great Lakes "Application.1" web page.

B. Economic Impacts

1. Think about the harmful and beneficial effects of Zebra mussels.
What are some ways Zebra mussels are economically important?



- Click "Forward" at the bottom of the page.



C. Progress

The Great Lakes border not only the US, but also Canada. The water quality of the lakes affects both countries. We have to work together to provide a future for the lakes and the people who live on them. Both countries signed an agreement called "The Great Lakes Water Quality Agreement" that has helped us clean up the lakes.

- Click on the "State of the Lakes" site.

1. Overall, which lake had the highest concentration of phosphorous in 1991/92?

2. Which lake had the highest concentration of PCB's in fish?

Lake _____ had a PCB concentration of _____ ppm.

3. Which lake had the highest concentration of PCB's in gull eggs?

Lake _____ had a PCB concentration of _____ ppm.

4. Which lake had the second highest concentration of PCB's in gull eggs?

Lake _____ had a PCB concentration of _____ ppm.

5. Compare the small inset map in the upper right corner to the larger map. Which areas show the greatest improvement between 1983 and 1991?



6. What does the graph of the PCB concentration at Mugg's Island show is happening over time?

7. What do you think caused the trend in question 5 above?



- Click "Back" to return to the Great Lakes "Application.2" page.
- Click "Forward" at the bottom of the page.

D. Long-term Recovery



- Click on the "Great Lakes Future" site.
- Read from "The Future of the Great Lakes" section to the bottom of the page.



1. What can we do to ensure the recovery of the Great Lakes' ecosystems?



2. How can we use maps of populations to help understand the living resources in the Great Lakes?



- Click "Back" to return to the NOAA Research "Great Lakes" main page, or choose "Great Lakes" from your Bookmarks or Favorites.
- Click "Enrichment."

V. Enrichment Activities

A. Interviews

1. Interview a meteorologist about the specific weather conditions that are caused by the *Great Lakes*, especially in winter.
2. Talk with someone who has gone ice fishing and ask about what is caught, when is the best time to go, and what is used for bait.

B. Newspaper Activities

1. Using the weather section or map, keep a record of the daily temperatures or snowfall at cities around the *Great Lakes* vs. cities inland. What is the difference between inland and coastal cities' temperature and rainfall?
2. Collect news articles related to the health of the *Great Lakes* and summarize each article.

C. Research

1. Write a short report on how the *Great Lakes* formed. Include when they were formed, how long it took, and a diagram of what happened.
2. Find out who was the first European to see the *Great Lakes*.
3. Using a map, list all the major cities and their populations that border the *Great Lakes*. Add the total population of the cities.





4. Research Native American tribes that lived in the Great Lakes area.
 5. Find out what industries are supported by the Great Lakes.
 6. Find out why Chicago is called "The Windy City".
 7. Research diatoms and find out what they are used for.
- Click forward at the bottom of the page.

D. Related Web Sites

1. Great Lakes Effects on Weather
<http://www.met.fsu.edu/Classes/Met4301/reports/campbells.htm>
2. Great Lakes Environmental Research Laboratory
<http://www.glerl.noaa.gov>
3. Great Lakes Atlas - tons of info and great pictures
<http://www.epa.gov/glnpo/atlas/index.html>
4. Native American tribal information
<http://www.epa.gov/glnpo/atlas/glat-ch3.html#Native%20People>
5. About Our Great Lakes
<http://www.glerl.noaa.gov/pr/ourlakes/>
6. Foreign Species
<http://www.glerl.noaa.gov/pubs/brochures/invasive/ansprimer.pdf>
7. Health Indicator
<http://www.glerl.noaa.gov/pubs/brochures/dipoflyer/dipo.pdf>